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Room: 32

Grade: 5th

Wǒ de Kē Xué Yán Jiū Tí Mù Shì Shèn Tòu Zuò Yòng  
我的科学研究题目是渗透作用

Problem: How does material pass from the outside a cell through the cell membrane inside the cell.

Wǒ de Kē Xué Yán Jiū Wèn Tí Shì Wù Zhì Rú Hé Tōng Guò Xì Bào Mó,  
我的科学研究问题是：物质如何通过细胞膜，  
Jìn Rù Xì Bào  
进入细胞。

What I want to learn: I want to learn how does osmosis work?

Wǒ Xiǎng Xué Shí Me Wǒ Xiǎng Xué Xì Shèn Tòu Zuò Yòng de Gōng Néng  
我想学什么：我想学习渗透作用的功能？

Hypothesis: I think when you cut a potato and put it in freshwater it will look the same in color, freshness and appearance as the one placed in salt water.

Wǒ de Jiǎ Shè Shì Wǒ Rèn Wéi Bǎ Qiē Piàn de Mǎ Líng Shǔ Tǔ Dòu,  
我的假设是：我认为，把切片的马铃薯 / 土豆，  
Fàng Zài Dàn Shuǐ Huò Yán Shuǐ Zhōng Tā de Yán Sè Xīn Xiān Dù Hé Wài Guān,  
放在淡水或盐水中，它的颜色，新鲜度和外观，  
Huì Shì Yī Yàng de  
会是一样的。

Materials: I used one potato, two plastic containers, two tablespoon of salt, water and a knife.

Wǒ Yòng de Cái Liào Yǒu Wǒ Yòng Yī Gè Mǎ Líng Shǔ Tǔ Dòu Liǎng Gè Sù  
我用的材料有：我用一个马铃薯 / 土豆，两个塑  
Liào de Róng Qì Liǎng Tāng Chí Yán Shuǐ Hé Yī Bǎ Dāo  
料的容器，两汤匙盐，水和一把刀。

What did I do: I added water to each plastic container then, I put salt in the water of the other container. After that, I watched it for six hours to see what is going to happen to the potatoes in salt water compared to the fresh water.

Wǒ Zuò Liǎo Xiē Shí Me Wǒ Zài Měi Gè Sù Liào Róng Qì Lǐ Jiā Shuǐ Zài  
我做了些什么：我在每个塑料容器里加水，在  
Yi Gè Róng Qì Lǐ Jiā Yán Bǎ Mǎ Líng Shǔ Tǔ Dòu Fàng Zài Róng Qì Lǐ  
一个容器里加盐，把马铃薯/土豆放在容器里。  
Rán Hòu Wǒ Guān Kàn Liǎo Liù Gè Xiǎo Shí Kàn Kàn Yǒu Shí Me Biàn Huà Bǐ  
然后我观看了六个小时，看看有什么变化？比  
Jiào Yì Xià Yán Shuǐ Hé Dàn Shuǐ Zhōng de Mǎ Líng Shǔ Tǔ Dòu  
较一下盐水和淡水中的马铃薯/土豆。

Observation:

The potato slice soaking in freshwater did not have much of a difference. It is just a little more rigid than before. This is because there is the more salt and other dissolved chemicals within the potato than the surrounding water. This means that the water will move into the potato.

Wǒ Guān Chá Liǎo  
我观察了：

Mǎ Líng Shǔ Tǔ Dòu Piàn Jìn Pào Zài Dàn Shuǐ Zhōng Bìng Méi Yǒu Tài Dà de Qū Bié  
马铃薯/土豆片浸泡在淡水中并没有太大的区别。  
Jīn Jīn Shì Bǐ Yǐ Qián Duō Liǎo Yì Diǎn Yìng Dù Zhè Shì Yīn Wéi Yǒu Gēng Duō  
仅仅是比以前多了一点硬度。这是因为有更多  
Dí Yán Hé Qí Tā Róng Jiě Huà Xué Wù Zhì Zài Mǎ Líng Shǔ Nèi Zhè Yì Wèi  
的盐和其它溶解化学物质在马铃薯内。这意味  
Zhuó Shuǐ Jìn Rù Mǎ Líng Shǔ Nèi  
着水进入马铃薯内。

The potato slice soaking in saltwater looks very different from the original and the other slice in freshwater. It seems to have wilted, gotten very soft and flexible.

Mǎ Líng Shǔ Piàn Jìn Pào Zài Yán Shuǐ Zhōng Hé Yuán Lái de Kàn Qǐ Lái Fēi Cháng Bù  
马铃薯片浸泡在盐水中和原来的看起来非常不  
Tóng Tā Yě Hé Zài Dàn Shuǐ Zhōng de Bù Yí Yàng Tā Sì Hū Yǐ Jīng Kū  
同，它也和淡水中的不一样。它似乎已经枯  
Wěi Biàn Dé Fēi Cháng Róu Ruǎn Ēr Qiě Yǒu Dàn Xìng  
萎，变得非常柔软而且有弹性。

Why did that happen? It has to do with a process called osmosis. The potato is made up of tiny, living units called cells. Each cell is surrounded by a cell membrane which acts much as your skin does. It keeps the cells parts inside and keeps other things outside, protecting the cell.

Wéi Shí Me Huì Zhè Yàng Nǐ Zhè Gè Guò Chéng Bèi Jiào Zuò Shèn Tōu Zuò Yòng  
为什么会这样呢？这个过程被叫做渗透作用。

Mǎ Líng Shǔ Shì Yǒu Wēi Xiǎo de Huó Dī Xì Bào Zǔ Chéng Měi Gè Xiǎo Xì  
马铃薯是由微小的，活的细胞组成。每个小细

Bào Bèi Xì Bào Mó Bāo Wéi Qí Lái Hé Nǐ de Pí Fū Yí Yàng Xì Bào  
胞被细胞膜包围起来，和你的皮肤一样。细胞

Mó Bǎo Hù Xì Bào  
膜保护细胞。

While this membrane stops most things, water can pass through it. The water tends to move towards higher concentrations of dissolved chemicals, like the salt.

Dāng Xì Bào Mó Kě Yǐ Zǔ Zhǐ Dà Duō Shù de Wù Zhì Shuǐ Shì Kě Yǐ Tōng  
当细胞膜可以阻止大多数的物质，水是可以通

Guò Tā de Shuǐ Huì Zhāo Zhuó Gēng Gāo Nóng Dù de Róng Jiě Huà Xué Wù Pǐn Qù  
过它的。水会朝着更高浓度的溶解化学物品去，

Lì Rú Yán  
例如盐。

Conclusion:

The water outside the cell is saltier than the water inside, water will move from the inside of the cell to the outside. As the water left the cell it was much like letting the air out of a balloon. As more and more of the cells lost water, the slice of potato became soft and flexible.

Wǒ Dī Jié Lùn Shì  
我的结论是：

Xì Bào Wài de Shuǐ Shì Bǐ Nèi Bù de Shuǐ Gēng Xiǎn Shuǐ Huì Cóng Xì Bào Nèi  
细胞外的水是比较内部的水更咸，水会从细胞内

Bù Yí Dòng Dào Wài Bù Yǒu Yú Shuǐ Lí Kai Xì Bào Tā Hěn Xiàng Qì Qiú  
部移动到外部。由于水离开细胞，它很像气球

Méi Yǒu Qì Suí Zhuó Yuē Lái Yuē Duō de Xì Bào Shī Qù Shuǐ Mǎ Líng Shǔ  
没有气。随着越来越多的细胞失去水，马铃薯

Piàn Biàn Dé Róu Ruǎn Ér Qiě Yǒu Dàn Xìng  
片变得柔软而且有弹性。

## Traditional Chinese Character

wǒ de kē xué yán jiū tí mù shì shèn tòu zuò yòng  
我的科學研究題目是滲透作用

wǒ de kē xué yán jiū wèn tí shì : wù zhì rú hé tōng guò xì bāo mó , jìn rù xì bāo 。  
我的科學研究問題是：物質如何通過細胞膜，進入細胞。

wǒ de jiǎ shè shì : wǒ rèn wéi , bǎ qiē piàn de mǎ líng shǔ / tǔ dòu , fàng zài dàn shuǐ huò yán  
我的假設是：我認為，把切片的馬鈴薯/土豆，放在淡水或鹽  
shuǐ zhōng , tā de yán sè , xīn xiān dù hé wài guān , huì shì yí yàng de 。  
水中，它的顏色，新鮮度和外觀，會是一樣的。

wǒ yòng de cái liào yǒu : wǒ yòng yí ge mǎ líng shǔ / tǔ dòu , liǎng ge sù liào de róng qì , liǎng  
我用的材料有：我用一個馬鈴薯/土豆，兩個塑料的容器，兩  
tāng chí yán shuǐ hé yí bǎ dāo 。  
湯匙鹽，水和一把刀。

wǒ zuò le xiē shē mo : wǒ zài měi ge sù liào róng qì lǐ jiā shuǐ , zài yí ge róng qì lǐ jiā yán ,  
我做了些什麼：我在每個塑料容器裡加水，在一個容器裡加鹽，  
bǎ mǎ líng shǔ / tǔ dòu fàng zài róng qì lǐ 。 rán hòu wǒ guān kàn le liù ge xiǎo shí , kàn kàn yǒu  
把馬鈴薯/土豆放在容器裡。然後我觀看了六個小時，看看有  
shē mo biàn huà ? bǐ jiào yí xià yán shuǐ hé dàn shuǐ zhōng de mǎ líng shǔ / tǔ dòu 。  
什麼變化？比較一下鹽水和淡水中的馬鈴薯/土豆。

wǒ guān chá le :  
我觀察了：

mǎ líng shǔ / tǔ dòu piàn jìn pào zài dàn shuǐ zhōng bìng méi yǒu tài dà de qū bié 。 jǐn jǐn shì bǐ yǐ  
馬鈴薯/土豆片浸泡在淡水中並沒有太大的區別。僅僅是比以  
qián duō le yí diǎn yīng dù 。 zhè shì yīn wéi yǒu gèng duō de yán hé qí tā róng jiě huà xué wù zhì zài  
前多了一點硬度。這是因為有更多的鹽和其它溶解化學物質在  
mǎ líng shǔ nèi 。 zhè yì wèi zhe shuǐ jìn rù mǎ líng shǔ nèi 。  
馬鈴薯內。這意味著水進入馬鈴薯內。

mǎ líng shǔ piàn jìn pào zài yán shuǐ zhōng hé yuán lái de kàn qǐ lái fēi cháng bù tóng , tā yě hé zài dàn  
馬鈴薯片浸泡在鹽水中和原來的看起來非常不同，它也和  
shuǐ zhōng de bù yí yàng 。 tā sì hū yǐ jīng kū wěi , biàn dé fēi cháng róu ruǎn ér qiě yǒu dàn xìng 。  
水中的不一樣。它似乎已經枯萎，變得非常柔軟而且有彈性。

wéi shé mo huì zhè yàng nē      zhè ge guò chéng bèi jiào zuò shèn tòu zuò yòng      mǎ líng shǔ shì yǒu wēi xiǎo  
為什麼會這樣呢？這個過程被叫做滲透作用。馬鈴薯是由微小  
de      huó de xì bāo zǔ chéng      měi ge xiǎo xì bāo bèi xì bāo mó bāo wéi qī lái      hé nǐ de pí  
的，活的細胞組成。每個小細胞被細胞膜包圍起來，和你的皮  
fú yí yàng      xì bāo mó bāo hù xì bāo  
膚一樣。細胞膜保護細胞。

dāng xì bāo mó kě yǐ zǔ zhǐ dà duō shù de wù zhì      shuǐ shì kě yǐ tōng guò tā de      shuǐ huì zhāo  
當細胞膜可以阻止大多數的物質，水是可以通過它的。水會朝  
zhè gèng gāo nóng dù de róng jiě huà xué wù pǐn qù      lì rú yán  
著更高濃度的溶解化學物品去，例如鹽。

wǒ de jié lùn shì  
我的結論是：

xì bāo wài de shuǐ shì bǐ nèi bù de shuǐ gèng xiān      shuǐ huì cóng xì bāo nèi bù yí dòng dào wài bù  
細胞外的水是比较內部的水更鹹，水會從細胞內部移動到外部。  
yóu yú shuǐ lí kāi xì bāo      tā hěn xiàng qì qiú méi yǒu qì      suí zhe yuè lái yuè duō de xì bāo shī  
由於水離開細胞，它很像氣球沒有氣。隨著越來越多的細胞失  
qù shuǐ      mǎ líng shǔ piàn biàn dé róu ruǎn ér qiě yǒu dàn xìng  
去水，馬鈴薯片變得柔軟而且有彈性。